

AMENDMENT TO THE CLAIMS

Claim 1. (Original) A surgical tourniquet controller, said controller comprising:

 a pressure source, said pressure source supplying a pressure medium at a sufficient pressure to pressurize a pressure cuff being used as a surgical tourniquet;

 a pressure port, said pressure port allowing a pressure medium to be supplied to a pressure cuff;

 a source valve, said source valve interposed between said pressure source and said pressure port;

 an occlusion sensing means for detecting blood flow past pressure cuff; and

 a processor, said processor communicably connected to said occlusion sensing means, said processor further communicably connected to said source valve;

 wherein said processor instructs said source valve to increase the pressure in a pressure cuff when said occlusion sensing means detects blood flow past the pressure cuff.

Claim 2. (Original) A surgical tourniquet controller according to claim 1, wherein said occlusion sensing means comprises a pressure transducer for detecting pressure variations in the pressure cuff indicative of blood flow past the pressure cuff.

Claim 3. (Original) A surgical tourniquet controller according to claim 2, wherein said occlusion sensing means further comprises a processor having instructions for detecting oscillometric pressure variations indicative of blood flow past the pressure cuff.

Claim 4. (Original) A surgical tourniquet controller according to claim 2, wherein said occlusion sensing means further comprises a processor having instructions for detecting Korotkoff sounds indicative of blood flow past the pressure cuff.

Claim 5. (Original) A surgical tourniquet controller according to claim 2, wherein said occlusion sensing means further comprises signal processing circuitry to detect oscillometric variations in the pressure indicative of blood flow past the pressure cuff.

Claim 6. (Original) A surgical tourniquet controller according to claim 2, wherein said occlusion sensing means further comprises signal processing circuitry to detect Korotkoff sounds indicative of blood flow past the pressure cuff.

Claim 7. (Original) A surgical tourniquet controller according to claim 1, further comprising a pressure threshold value, wherein said processor instructs said source valve to increase the pressure in a pressure cuff only when the increased pressure would not exceed the pressure threshold value.

Claim 8. (Original) A surgical tourniquet controller according to claim 1, further comprising a pressure relief valve, said pressure relief valve having a pre-determined pressure threshold value, said pressure relief valve being connected to said pressure port such that if a pressure in said pressure port exceeds said pressure threshold value, said pressure relief valve vents said pressure port.

Claim 9. (Original) A surgical tourniquet controller according to claim 1, wherein said occlusion sensing means comprises a photometric sensor for measuring blood oxygen saturation.

Claim 10. (Original) A surgical tourniquet controller according to claim 9, wherein said surgical tourniquet controller further comprises a pressure cuff, said photometric sensor being located on an inner surface of said pressure cuff.

Claim 11. (Original) A surgical tourniquet controller according to claim 10, wherein said photometric sensor comprises a laser doppler perfusion monitor.

Claim 12. (Original) A surgical tourniquet controller according to claim 9, wherein said surgical tourniquet controller further comprises a processor having instructions for detecting variations in sensed blood oxygen saturation levels indicative of blood flow past the pressure cuff.

Claim 13. (Original) A surgical tourniquet controller according to claim 9, wherein said surgical tourniquet controller further comprises signal processing circuitry for detecting variations in sensed blood oxygen saturation levels indicative of blood flow past the pressure cuff.

Claim 14. (Currently Amended) A method for controlling a surgical tourniquet, said method comprising the steps of:

inflating a pressure cuff to an initial pressure;
incrementally decreasing pressure in the pressure cuff until flow is detected by a flow sensor past the pressure cuff;
increasing the pressure in the pressure cuff a pre-set amount;
monitoring the flow sensor to detect flow past the pressure cuff; and
when flow is detected past said pressure cuff, incrementally increasing pressure in said pressure cuff until flow is no longer detected.

Claim 10 15. (Currently Amended) A method for controlling a surgical tourniquet according to claim 9 14, further comprising the step of:

when flow is detected past said pressure cuff, increasing the pressure in said pressure cuff a pre-set amount once flow is no longer detected past said pressure cuff.

Claim 11 16. (Currently Amended) A method for controlling a surgical tourniquet according to claim 9 14, further comprising the step of:

receiving a desired inflation duration;
starting a timer when the pressure cuff is initially inflated; and
deflating the pressure cuff when the desired inflation duration has occurred.

Claim 12 17. (Currently Amended) A method for controlling a surgical according to claim 9 14, further comprising the steps of:

receiving a desired inflation duration;

starting a timer when the pressure cuff is initially inflated;
informing an operator when the desired inflation duration has occurred.

Claim 13 18. (Currently Amended) A method for controlling a surgical according to claim 9 14, further comprising the steps of:

determining a threshold pressure above which the pressure cuff should not be inflated;
ceasing pressure increases when the threshold pressure is achieved; and
informing an operator that the threshold pressure has been achieved.

Claim 14 19. (Currently Amended) A method for controlling a surgical according to claim 9 14, further comprising the steps of:

receiving a threshold pressure above which the pressure cuff should not be inflated from an operator;
ceasing pressure increases if the threshold pressure is reached; and
informing an operator that the threshold pressure has been reached.

Claim 15 20. (Currently Amended) A computer readable medium tangibly embodying instructions which, when executed by a computer, cause a surgical tourniquet controller to:
inflate a pressure cuff to an initial pressure;
incrementally decrease pressure in the pressure cuff until flow is detected past the pressure cuff by a flow sensor;
increase the pressure in the pressure cuff a pre-set amount;

monitor the flow sensor to detect flow past the pressure cuff; and
when flow is detected past said pressure cuff, incrementally increase the pressure in
said pressure cuff until flow is no longer detected.

receive indications from a sensor of blood flow past a pressure cuff when blood
flows past the pressure cuff;

incrementally increase pressure in the pressure cuff when blood flow past a
pressure cuff is detected;

determine whether the increased pressure in the pressure cuff has occluded blood
flow past the pressure cuff; and

when blood flow has not been occluded, continue to incrementally increase blood
pressure until blood flow past the pressure cuff is occluded.

Claim 16 21. (Currently Amended) A computer readable medium tangibly embodying
instructions according to claim 15 20, wherein the instructions when executed further
cause a surgical tourniquet controller to:

receive a desired inflation duration;

start a timer when a pressure cuff is initially inflated; and to

deflate the pressure cuff when the desired inflation duration has occurred.

Claim 17 22. (Currently Amended) A computer readable medium tangibly embodying
instructions according to claim 15 20, wherein the instructions when executed further
cause a surgical tourniquet controller to:

when blood flow past the pressure cuff is occluded, increase the pressure in said pressure cuff a pre-set amount.

Claim 18 23. (Currently Amended) A computer readable medium tangibly embodying instructions according to claim 15 20, wherein the instructions when executed further cause a surgical tourniquet controller to:

analyze pressure variations in the pressure cuff to detect oscillometric variations indicative of blood flow past said pressure cuff.

Claim 19 24. (Currently Amended) A computer readable medium tangibly embodying instructions according to claim 15 20, wherein the instructions when executed further cause a surgical tourniquet controller to:

analyze pressure variations in the pressure cuff to detect Korotkoff sounds indicative of blood flow past said pressure cuff.

Claim 19b 25. (Currently Amended) A computer readable medium tangibly embodying instructions according to claim 15 20, wherein the instructions when executed further cause a surgical tourniquet controller to:

analyze blood oxygen saturation levels indicative of blood flow past said pressure cuff.

Claim 20 26. (Currently Amended) A computer readable medium tangibly embodying instructions according to claim 15 20, wherein the instructions when executed further cause a surgical tourniquet controller to:

- receive a desired inflation duration;
- start a timer when a pressure cuff is initially inflated;
- signal an operator when the desired inflation duration has occurred;
- receive a deflate command from an operator; and
- deflate the pressure cuff upon receipt of the command from an operator.

Claim 21 27. (Currently Amended) A pressure cuff for use as a surgical tourniquet, said pressure cuff comprising:

- an inflatable bladder to compress an extremity and cause the occlusion of blood flow; and
- a photometric sensor to measure blood oxygen saturation.

Claim 22 28. (Currently Amended) A pressure cuff according to claim 21 27, wherein said inflatable bladder is enclosed in a pressure cuff sheath, said pressure cuff sheath having an inner surface, and wherein said photometric sensor is mounted to said pressure cuff such that said photometric sensor forms a portion of the surface of the inner surface of the pressure cuff sheath.

Claim 23 29. (Currently Amended) A pressure cuff according to claim 21 27, wherein said inflatable bladder is enclosed in a pressure cuff sheath, and wherein said photometric sensor is engaged to said pressure cuff via a flap mounted to said sheath.

Claim 24 30. (Currently Amended) A pressure cuff according to claim 23 29, further comprising an unconstricted blood oxygen sensor.

Claim 25 31. (Currently Amended) A pressure cuff according to claim 24 30, wherein said unconstricted blood oxygen sensor is engaged to said pressure cuff via a flap mounted to said sheath.